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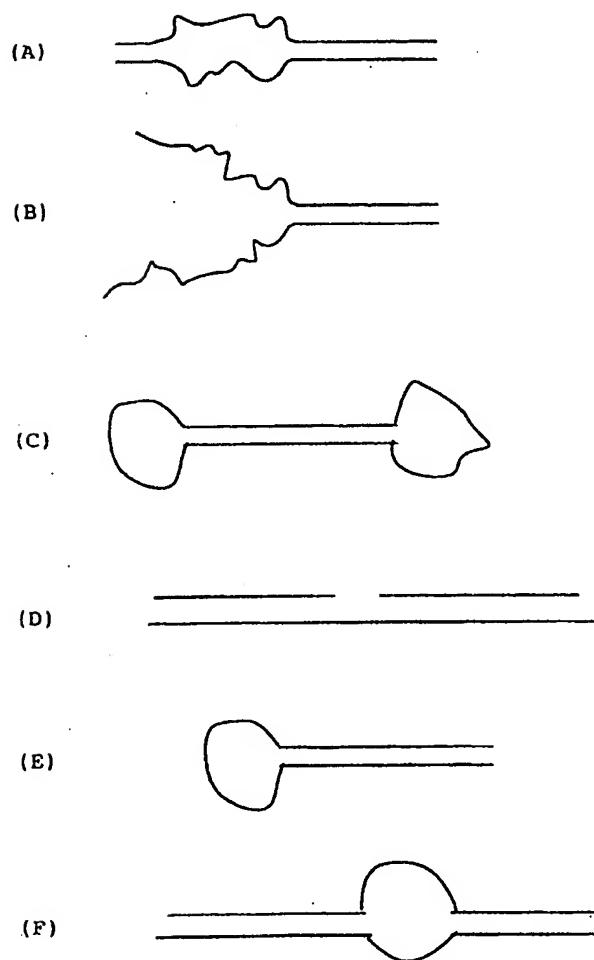


Figure 1 (A-F)

Construct Forms Comprising at Least one Single-Stranded
Region

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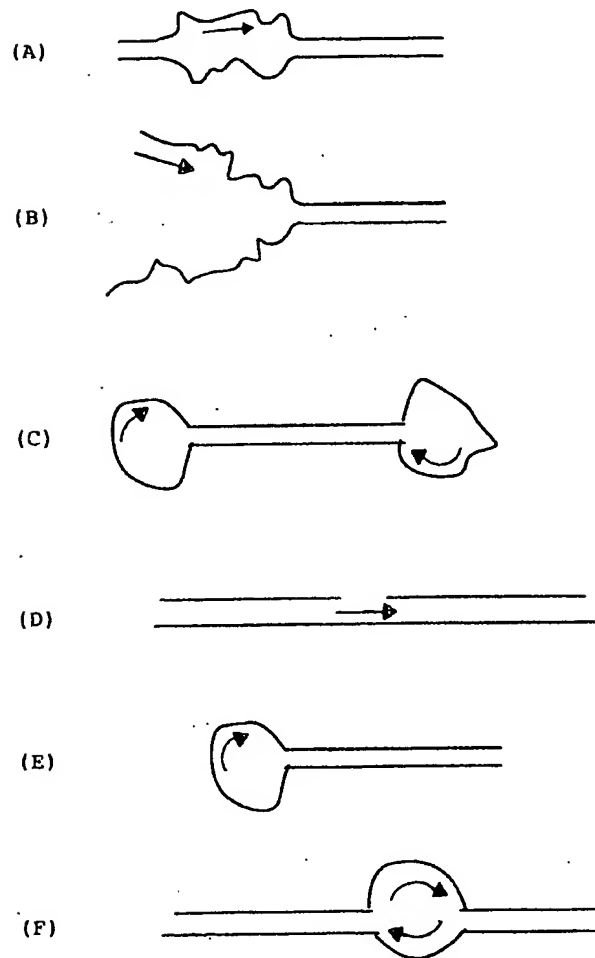


Figure 2 (A-F)

Functional Forms of the Construct

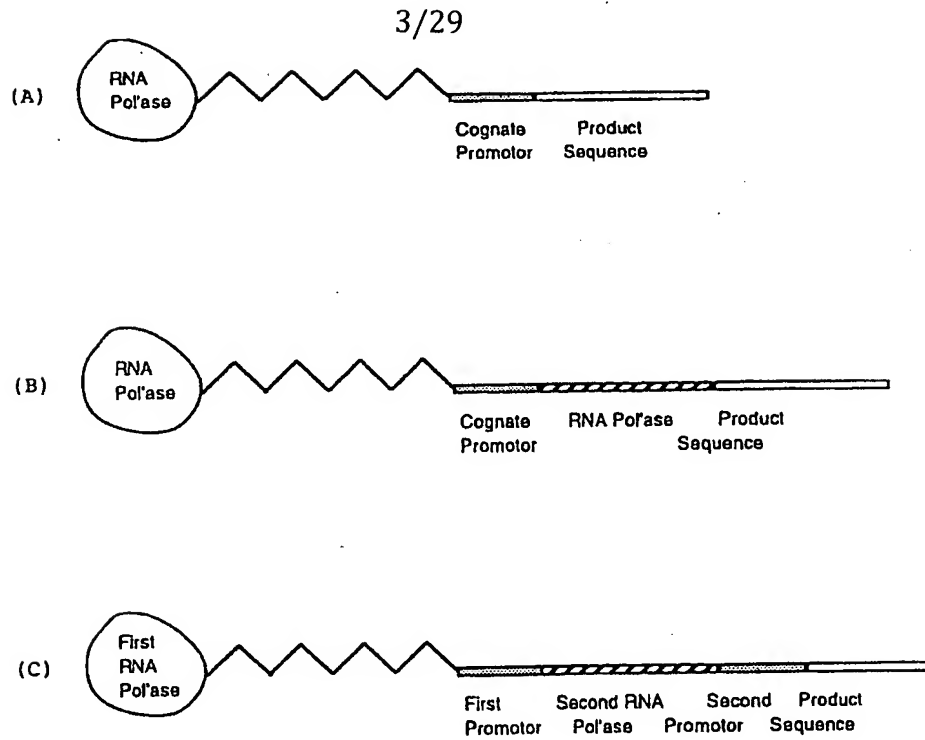


Figure 3 (A-C)

Three Constructs with an RNA Polymerase
Covalently Attached to a Transcribing Cassette

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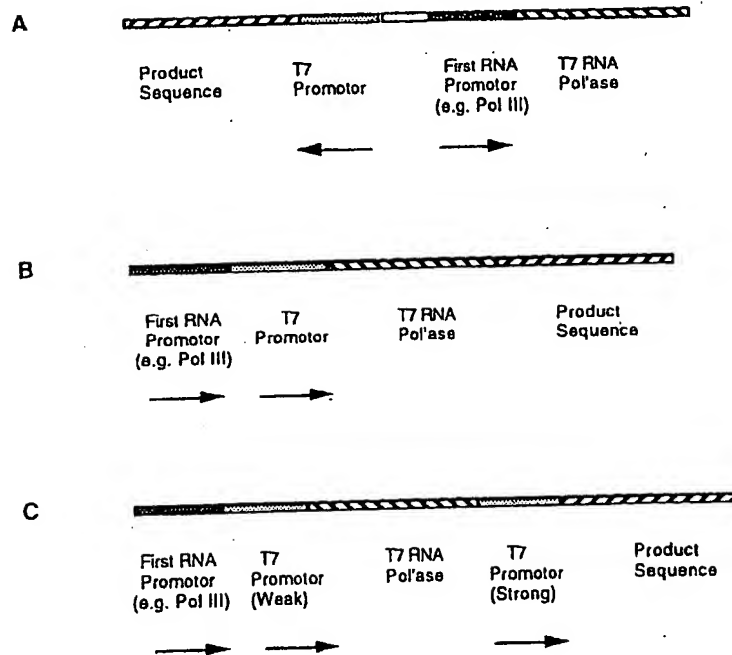


Figure 4 (A-C)

Three Constructs with Promoters
for Endogenous RNA Polymerase

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M13mp18. Seq Length: 7250

1.	AATGCTACTA	CTATTAGTAG	AATTGATGCC	ACCTTTTCAG	CTGGGGGGCC
51.	AAATGAAAAT	ATAGCTAAAC	AGGTTATTGA	CCATTTGCGA	AATGTATCTA
101.	ATGGTCAAAC	TAAATCTACT	CGTTGGCAGA	ATTGGGAATC	AACTGTTACA
151.	TGGAATGAAA	CTTCCAGACA	CCGTACTTTA	GTTGCATATT	TAAAACATGT
201.	TGAGCTACAG	CACCAGATTC	AGCAATTAA	CTCTAAGCCA	TCGGCAAAAA
251.	TGACCTCTTA	TCAAAAGGAG	CAATTAAAGG	TACTCTCTAA	TCCTGAOCTG
301.	TTGGAGTTTG	CTTCCGGTCT	GGTTGGCTTT	GAAGCTOGAA	TTAAAACGGG
351.	ATATTTGAAG	TCTTTGGGCG	TTCCTCTTAA	TCTTTTGTAT	GCAATCCGCT
401.	TTGCTTCTGA	CTATAATAGT	CAGGGTAAAG	ACCTGATTTT	TGATTTATGG
451.	TCATTTCTGT	TTTCTGAAGT	GTTTAAAGCA	TTTGAGGGGG	ATTCAATGAA
501.	TATTTATGAC	GATTCGGCAG	TATTCGAGCG	TATCCAGTCT	AAACATTTTA
551.	CTATTACCCC	CTCTGGCAAA	ACTTCTTTTG	CAAAAGCCTC	TCGCTATTTT
601.	GGTTTTTATC	GTCGTCTGGT	AAAAGAGGGT	TATGATAGTG	TTGCTCTTAC
651.	TATGCCCTGT	AATTCCCTTT	GGCGTTATGT	ATCTGCATTA	GTTGAATGTG
701.	GTATTCCTAA	ATCTCAACTG	ATGAATCTTT	CTACCTGTAA	TAATGTTGTT
751.	CCGTTAGTTC	GTTTTATTAA	CGTAGATTTT	TCTTCCCAAC	GTCCTGACTG
801.	GTATAATGAG	CCAGTTCTTA	AAATCGCATA	AGGTAATTCA	CAATGATTAA
851.	AGTTGAAATT	AAACCATCTC	AAGCCCAATT	TACTACTCGT	TCTGGTGTTC
901.	TGTCAGGGC	AAGCTTATT	CACTGAATGA	GCAGCTTTGT	TACGTTGATT
951.	TGGGTAATGA	ATATCCGGTT	CTTGTCGAAG	ATTACTCTTG	ATGAAGGTCA
1001	GCCAGCCTAT	GCGCCTGGTC	TGTACACCGT	TCATCTGTCC	TCTTTCAAAG
1051	TTGGTCAGTT	CGGTTCCCTT	ATGATTGAAC	GTCCTGGGCT	CGTTCCGGCT
1101	AAGTAACATG	GAGCAGGTGG	CGGATTTTGA	CACAATTTAT	CAGGCGATGA
1151	TACAAATCTC	CGTTGTACCT	TGTTTGGGCG	TTGGTATAAT	CGCTGGGGGT
1201	CAAAGATGAG	TGTTTTAGTG	TATCTTTTGG	CCTCTTTCGT	TTTAGGTTGG

Figure 5

M13mp18 Nucleic Acid Sequence

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1251	TGCGTTCGTA	GTGGCATTAC	GTATTTTACC	CGTTTAATGG	AAACTTCCTC
1301	ATGAAAAAGT	CTTTAGTCCT	CAAAGCCTCT	GTAGCGGTGG	CTAOCCTCGT
1351	TCCGATGCTG	TCTTTGCGTG	CTGAGGGTGA	CGATCCCGCA	AAAGCGGCGT
1401	TTAACTCCCT	GCAAGCCTCA	GCGACCGAAT	ATATCGGTTA	TGCGTGGGCG
1451	ATGGTTGTTG	TCATTGTGGG	CGCAACTATC	GGTATCAAGC	TGTTTAAGAA
1501	ATTACCTCG	AAAGCAAGCT	GATAAACCGA	TACAATTAAA	GGCTCCTTTT
1551	GGAGCCTTTT	TTTTTGAGAG	TTTTCAACGT	GAAAAAATTA	TTATTGCAA
1601	TTCCCTTAGT	TGTTCCCTTC	TATTCTCACT	CCGCTGAAAC	TGTTGAAAGT
1651	TGTTTAGCAA	AACCCCATAC	AGAAAATTCA	TTTACTAACG	TCTGGAAGA
1701	CGACAAAAC	TTAGATCGTT	ACGCTAACTA	TGAGGGTTGT	CTGTGGAATG
1751	CTACAGGCGT	TGTAGTTTGT	ACTGGTGAAG	AAACTCAGTG	TTACGGTACA
1801	TGGGTTCTCA	TTGGGCTTGC	TATCCCTGAA	AATGAGGGTG	GTGGCTCTGA
1851	GGGTGGCGGT	TCTGAGGGTG	GCGGTTCTGA	GGGTGGCGGT	ACTAAACCTC
1901	CTGAGTAAGG	TGATACAAC	ATCCCGGCGT	ATACTTATAT	CAACCTCTCT
1951	GACGGCACTT	ATCCGCTCG	TACTGAGCAA	AACCCGCTA	ATCCTAATCC
2001	TTCTCTTGAG	GAGTCTCAGC	CTCTTAATAC	TTTCATGTTT	CAGAATAATA
2051	GGTTCCGAAA	TAGGCAGGGG	GCATTAAC	TTTATACGGC	CACTGTTACT
2101	CAAGGCACTG	AACCCGTTAA	AACTTATTAC	CAGTACACTC	CTGTATCATC
2151	AAAAGCCATG	TATGACGCTT	ACTGGAACGG	TAAATTCAGA	GAAGGCGCTT
2201	CAAGGCACTG	AACCCGTTAA	AACTTATTAC	CAGTACACTC	CTGTATCATC
2151	AAAAGCCATG	TGCTCAAC	TCCTGTCAAT	GCTGGCGCGG	GCTCTGGTGG
2201	TCCATCTCGG	CTTTAATCAA	GATCCATTGG	TTTGTGAATA	TCAAGGCCAA
2251	TGCTCTGACC	TGCTCAAC	TCCTGTCAAT	GCTGGCGCGG	GCTCTGGTGG
2301	TGGTTCTGGT	GGCGGCTCTG	AGGGTGGTGG	CTCTGAGGGT	GGCGGTTCTG
2351	AGGGTGGCGG	CTCTGAGGGA	GGCGGTTCCG	GCTGGGCTC	TGGTTCCGGT
2401	GATTTTGATT	ATGAAAAGAT	GGCAACGCT	AATAAGGGGG	CTATGACCGA
2451	AAATGCGGAT	GAAAACCGCG	TACAGTCTGA	CGCTAAAGGC	AAACTTGATT

Figure 5

M13mp18 Nucleic Acid Sequence

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2501	CTGTGCTAC	TGATTAOGGT	GCTGCTATCG	ATGGTTTCAT	TGTTGAOGTT
2551	TOGGGCTTG	CTAATGGTAA	TGGTGCTACT	GGTGATTTTG	CTGGCTCTAA
2601	TTCCAAATG	GCTCAAGTGG	GTGAOGGTGA	TAATTCACCT	TTAATGAATA
2651	ATTTOCGTCA	ATATTACCT	TOOCTOCTC	AATGGTTTGA	ATGTGGOOCT
2701	TTTGTCTTTA	GCGCTGGTAA	ACCATATGAA	TTTTCTATTG	ATTGTGACAA
2751	AATAAACTTA	TTGGTGGTG	TCTTTGGGTT	TCTTTTATAT	GTTGOCACCT
2801	TTATGTATGT	ATTTTCTACG	TTTGCTAACA	TACTGCGTAA	TAAGGAGTCT
2851	TTATCATGOC	AGTTCTTTTG	GGTATTOCGT	TATTATTGGG	TTTOCTCGGT
2901	TTCTTCTGG	TAACTTTGT	CGCTATCTG	CTTACTTTTC	TTAAAAAGGG
2951	CTTOGGTAAG	ATAGCTATTG	CTATTTCAAT	GTTTCTTGCT	CTTATTATTG
3001	GGCTTAACTC	AATTCCTGTG	GGTTATCTCT	CTGATATTAG	CGCTCAATTA
3051	COCTCTGACT	TTGTTCAGGG	TGTTCAAGTA	ATTCTCOOCT	CTAATGCGCT
3101	TCOCTGTTTT	TATGTTATTC	TCTCTGTAAA	GGCTGCTATT	TTCATTTTTG
3151	ACGTTAAACA	AAAAATCGTT	TCTTATTTGG	ATTGGGATAA	ATAATATGGC
3201	TGTTTATTTT	GTAAGTGGCA	AATTAGGCTC	TGGAAAGAOG	CTOGTTAGOG
3251	TTGGTAAGAT	TCAGGATAAA	ATTGTAGCTG	GGTGCAAAAT	AGCAACTAAT
3301	CTTGATTAA	GGCTTCAAAA	OCTCOOCCAA	GTOGGGAGGT	TCGCTAAAAC
3351	GCOCTOGGTT	CTTAGAATAC	CGGATAAGOC	TTCTATATCT	GATTTGCTTG
3401	CTATTGGGOG	CGGTAATGAT	TOCTACGAATG	AAAATAAAAA	CGGCTTGCTT
3451	GTTCTOGATG	AGTGCGGTAC	TTGGTTTAAT	ACCOGTTCTT	GGAATGATAA
3501	GGAAGACAG	CCGATTATTG	ATTGGTTTCT	ACTGCTCGT	AAATTAGGAT
3551	GGGATATTAT	TTTTCTTGTT	CAGGACTTAT	CTATTGTTGA	TAAACAGGOG
3601	CGTTCTGCAT	TAGCTGAACA	TGTTGTTTAT	TGTOGTGCTC	TGGACAGAAT
3651	TACTTTAOCCT	TTTGTOGGTA	CTTTATATTC	TCTTATTACT	GGCTOGAAAA
3701	TGCTCTGOC	TAAATTACAT	GTTGGOGTTG	TTAAATATGG	CGATTCTCAA
3751	TTAAGCOCTA	CTGTTGAGOG	TTGGCTTTAT	ACTGGAAGA	ATTGTATAA
3801	CGCATATGAT	ACTAAACAGG	CTTTTCTAG	TAATTATGAT	TCOOGTGTIT

Figure 5

M13mp18 Nucleic Acid Sequence

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3851 ATTCTTATTT AACGCCTTAT TTATCACAAG GTGCGTATTT CAAAOCATTA
3901 AATTTAGGTC AGAAGATGAA ATTAACATAA ATAATATTGA AAAAGTTTTC
3951 TOGOGTTCTT TGTCTTGCGA TTGGAJTTGC ATCAGCATTY ACATATAGTT
4001 ATATAOCCA AOCTAAGCOG GAGGTTAAAA AGGTAGTCTC TCAGAOCTAT
4051 GATTTTGATA AATTCACATAT TGA CTCTCTCT CAGOGTCTTA ATCTAAGCTA
4101 TCGCTATGTT TTCAAGGATT CTAAGGGAAA ATTAATTAAT AGOGACGATT
4151 TACAGAAGCA AGGTTATTCA CTCACATATA TTGATTTATG TACTGTTTTC
4201 ATTAATAAAG GTAATTCAAA TGAAATTGTT AAATGTAATT AATTTTGTTT
4251 TCTTGATGTT TGTTTCATCA TCTTCTTTG CTCAGGTAAT TGAAATGAAT
4301 AATTOGCTC TGOGOGATT TTGTAACCTGG TATTCAAAGC AATCAGGCGA
4351 AATOCGTTATT GTTCTCDOOG ATGTAAAAGG TACTGTTACT GTATATTCAAT
4401 CTGAOGTTAA AOCTGAAAAT CTACGCAATT TCTTTATTTC TGTTTTACGT
4451 GCTAATAATT TTGATAATGGT TGGTTCAATT OCTTCCATAA TTCAGAAGTA
4501 TAATOCAAAC AATCAGGATT ATATTGATGA ATTGOCATCA TCTGATAATC
4551 AGGAATATGA TGATAATTOC GCTOCTCTG GTGGTTTCTT TGTTCOGCAA
4601 AATGATAATG TTAAGTCAAAC TTTTAAAATT AATAAGGTC GGGCAAAGGA
4651 TTTAATAOGA GTTGTOGAAT TGT TTGTAAA GTCTAATACT TCTAAATCCT
4701 CAAATGTATT ATCTATTGAC GGCTCTAATC TATTAGTTGT TAGTGCTOCT
4751 AAAGATATTT TAGATAAOCT TOCTCAATC CTTTCTACTG TTGATTTGOC
4801 AACTGAOCAG ATATTGATTG AGGGTTTGAT ATTTGAGGTT CAGCAAGGTC
4851 ATGCTTTAGA TTTTTCATTT GCTGCTGGCT CTCAGOGTGG CACTGTTGCA
4901 GGOGGTGTTA ATACTGAOOG OCTCAOCTCT GTTTTATCTT CTGCTGGTGG
4951 TTGTTTCGGT ATTTTAAATG GOGATGTTT AGGECTATCA GTTGGOGCAT
5001 TAAAGACTAA TAGOCATTCA AAAATATTGT CTGTGCOACG TATTCTTAOG
5051 CTTTCAGGTC AGAAGGGTTC TATCTCTGTT GGOCAGAATG TCCCTTTTAT
5101 TAAAGACTAA TAGOCATTCA AAAATATTGT CTGTGCOACG TATTCTTAOG
5151 OGATTGAGCG TCAAAATGTA GGTATTTCCA TGAGOGTTTT TOCTGTTGCA
```

-Figure 5

M13mp18 Nucleic Acid Sequence

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5201 ATGGCTGGGG . GTAATATTGT. TCTGGATATT ACCAGCAAGG OCGATAGTTT
5251 GAGTTCTCT ACTCAGGCAA GTGATGTTAT TACTAATCAA AGAAGTATTG
5301 CTACAAAGGT TAATTTGGGT GATGGACAGA CTCTTTTACT OGGTGGGCTC
5351 ACTGATTATA AAAACACTTC TCAAGATTCT GGGGTACGGT TOCTGTCTAA
5401 AATCCCTTTA ATCGGGCTCC TGTTTAGCTC CCGCTCTGAT TOCAAAGAGG
5451 AAAGCAAGTT ATAAGTGCTC GTCAAAGCAA CCATAGTAAG CGCCCTGTAG
5501 CGGGGCATTA AGGGGGGGGG GTGTGGTGGT TAAGGGCAGC GTGAAGGCTA
5551 CACTTGGCAG CGCCCTAGGG CCGGCTCCTT TCGCTTTCTT CCCTTCCTTT
5601 CTGGCCAGGT TGGGGGCTT TCCCGGTCAA GCTCTAAATC GGGGGCTCC
5651 TTTAGGGTTC CGATTTAGTG CTTTACGGCA CCTGGACCC AAAAAGCTG
5701 ATTTGGGTGA TGGTTCAGT AGTGGGCAT CGCCCTGATA GACGGTTTTT
5751 CGCCCTTTGA CGTTGAGTC CAGGTTCTTT AATAGTGAC TCTGTTCOA
5801 AACTGGAACA AACTCAAAC CTATCTGGG CTATCTTTT GATTTATAAG
5851 GGATTTGOC GATTTGGAA CCACATCAA ACAGGATTTT CGCCTCTGG
5901 GGCAAACAG CGTGGACCC TTGCTGCAAC TCTCTAGGG CCAGGGGGTG
5951 AAGGGCAATC AGCTGTTGCC CGTCTGGCTG GTGAAAAGAA AAACCAACCT
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6301 GTTTTACAAC GTGGTGACTG GGAAGACCT . GGGTTACCC AACTTAATCG
6351 CCTTGCAGCA CAATCCCTT TGGCAGCTG GGGTAATAGC GAAGAGGGCC
6401 GCAAGGATCG CCCTTCCAA CAGTTGGCA GCTGAATGG CGAATGGGC
6451 TTTGCTGGT TTGGGGACC AGAAGGGTG CCGGAAAGCT GGCTGGAGTG
6501 CGATCTTCT GAGGGGATA CGGTGGTGT CCGTCAAAC TGGCAGATGC

```

Figure 5

M13mp18 Nucleic Acid Sequence

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6551	A0GGTTA0GA	T0G000CATC	TACACCAACG	TAA0CTAT0C	CATTACGGTC
6601	AAT00G00GT	TTGTT00CAC	GGAGAAT00G	ACGGGTTGTT	ACT0GCTCAC
6651	ATTTAATGTT	GATGAAAGCT	GGCTACAGGA	AG00CAGA0G	CGAATTATTT
6701	TTGATGG0GT	TOCTATTGGT	TAAAAAATGA	GCTGATTTAA	CAAAAAATTTA
6751	A0G0GAATTT	TAACAAAATA	TTAACGTTTA	CAATTTAAAT	ATTGCTTAT
6801	ACAATCTT0C	TGTTTTTGGG	GCTTTTCTGA	TTATCAAC0G	GGGTACATAT
6851	GATTGACATG	CTAGTTTTAC	GATTAC0GTT	CATCGATTCT	CTTGTTTGCT
6901	0CAGACTCTC	AGGCAATGAC	CTGATAG0CT	TTGTAGATCT	CTCAAAAATA
6951	GCTA00CTCT	00GGCATGAA	TTTATCAGCT	AGAA0GGTTG	AATATCATAT
7001	TGATGGTGAT	TTGACTGTCT	00GG0CTTTC	TCAC0CTTTT	GAATCTTTAC
7051	CTACACATTA	CTCAGGCATT	GCATTTAAAA	TATATGAGGG	TTCTAAAAAT
7101	TTTTATCCTT	GGGTTGAAAT	AAAGGCTTCT	000GCAAAAG	TATTACAGGG
7151	TCATAATGTT	TTTGGTACAA	0CGATTTAGC	TTTATGCTCT	GAGGCTTTAT

Figure 5

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COMPLEMENTARY TO M ₁₃			
POSITION	5' . . . 3'	POSITION	
645	AGCAACACTATCATA	631	M ₁₃ /1
615	ACGAACGATAAAAAAC	601	M ₁₃ /2
585	TTTTGCAAAAGAAGT	571	M ₁₃ /3
555	AATAGTAAATGTTT	541	M ₁₃ /4
525	CAATACTGCGGAATG	511	M ₁₃ /5
495	TGAATCCCCCTCAAA	481	M ₁₃ /6
465	AGAAAACGAGAATGA	451	M ₁₃ /7
435	CAGGTCTTTACCOCTG	421	M ₁₃ /8
405	AGGAAACGGGATTGC	391	M ₁₃ /9
375	AGGAAGCCCGAAAGA	361	M ₁₃ /10

COMPLEMENTARY TO SS PHAGE DNA			
POSITION	5' . . . 3'	POSITION	
351	ATATTTGAAGTCTTT	366	M ₁₃ /11
371	TCTTTTGTGCAAT	386	M ₁₃ /12
391	CTATAACTCAGGG	406	M ₁₃ /13
411	TGATTTATGGTCATT	426	M ₁₃ /14
431	GTTTAAAGCATTTGA	446	M ₁₃ /15
451	TATTTATGACGATTC	466	M ₁₃ /16
471	TATCCAGTCTAAACA	486	M ₁₃ /17
491	CTCTGGCAAACTTC	506	M ₁₃ /18
511	TCGCTATTTGGTTT	526	M ₁₃ /19
531	AAACGAGGGTTATGA	546	M ₁₃ /20

Figure 6

Primers for Nucleic Acid Production
Derived from M13mp18 Sequence

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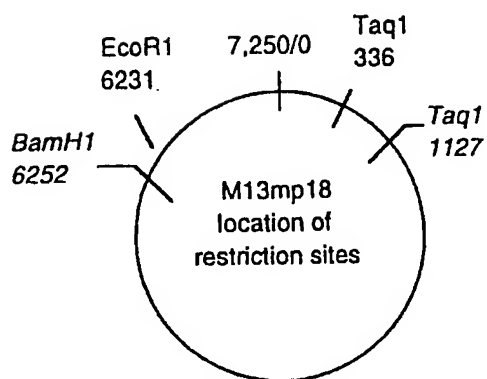
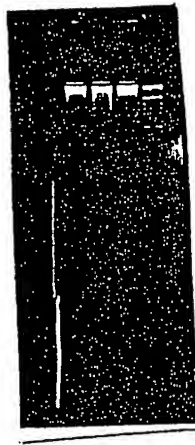


Figure 7

Appropriate M13mp18 Restriction Sites

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Lane 1: from calf thymus + Taq digested mp18 amplification reaction
Lane 2: from Taq digested mp18 amplification reaction
Lane 3: from calf thymus amplification reaction
Lane 4: øX174 Hinf1 size marker

Figure 8

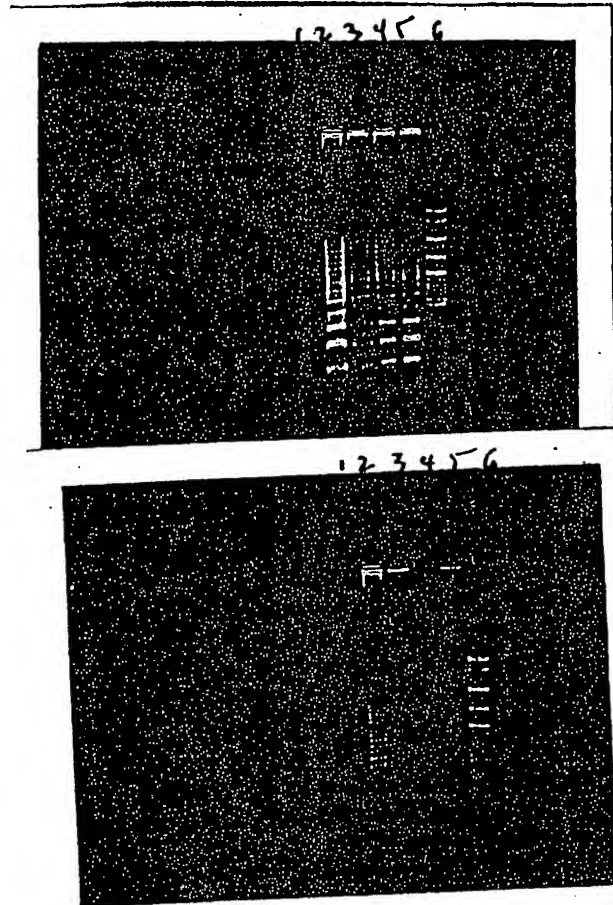
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Lane 1: no template
Lane 2: mp18 template, phosphate buffer
Lane 3: Mspl/pBR322 size marker
Lane 4: mp18 template, MOPS buffer

Figure 9

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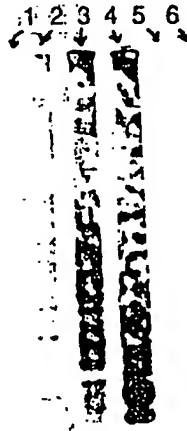


Top= (+) Template
Bottom= (-) Template

Lane 1: phosphate buffer
Lane 2: MES
Lane 3: MOPS
Lane 4: DMAB
Lane 5: DMG
Lane 6: pBR322/MspI size marker

Figure 10

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Lane 1: DMAB buffer, no template
Lane 2: DMAB buffer, mp18 template
Lane 3: DMG buffer, no template
Lane 4: DMG buffer, mp18 template
Lane 5: No reaction
Lane 6: 200 ng Taq I digested mp18
size marker/positive control

Figure 11

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First Time Interval Second Time Interval

Agarose Gel Analysis

Lane 1: lambda Hind III marker
Lane 2: Amp/Untreated
Lane 3: Amp/Kinased
Lane 4: Amp/Kinased/Ligated
Lane 5: PCR/Untreated
Lane 6: PCR/Kinased
Lane 7: PCR/Kinased/Ligated
Lane 8: phiX174/Hinf1 marker

Figure 12

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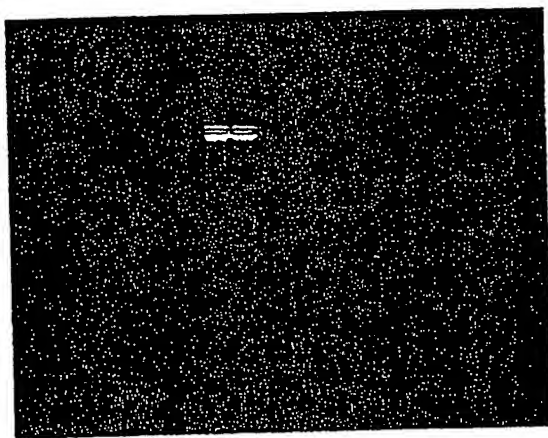
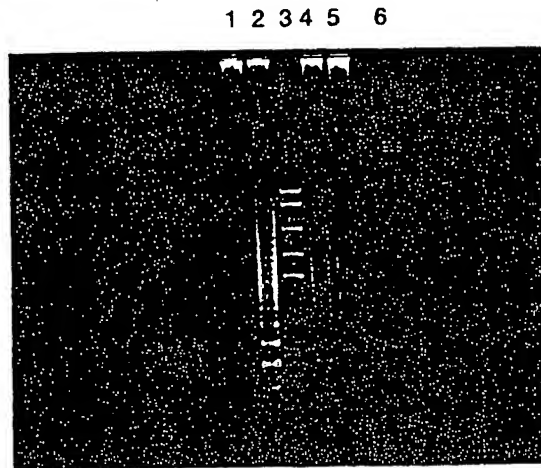


Figure 13

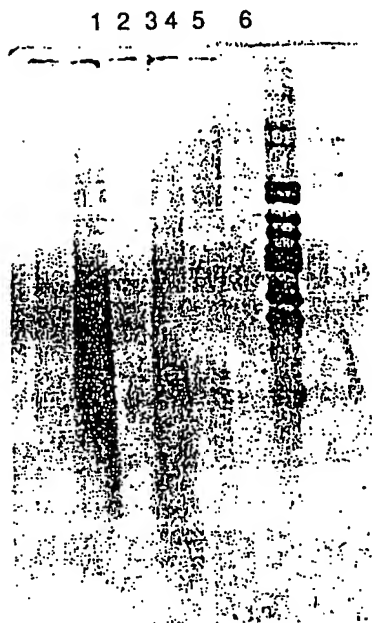
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Lane 1: Primers alone
Lane 2: Primers + taq digested M13 DNA
Lane 3: Molecular weight markers
Lane 4: Primers + RNA
Lane 5: Primers alone
Lane 6: M13 digested DNA
Buffer was dimethyl amino glycine, pH 8.6

Figure 14

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Lane 1: Primers alone
Lane 2: Primers + taq digested M13 DNA
Lane 3: Molecular weight markers
Lane 4: Primers + RNA
Lane 5: Primers alone
Lane 6: M13 digested DNA
Buffer was dimethyl amino glycine, pH 8.6

Figure 15

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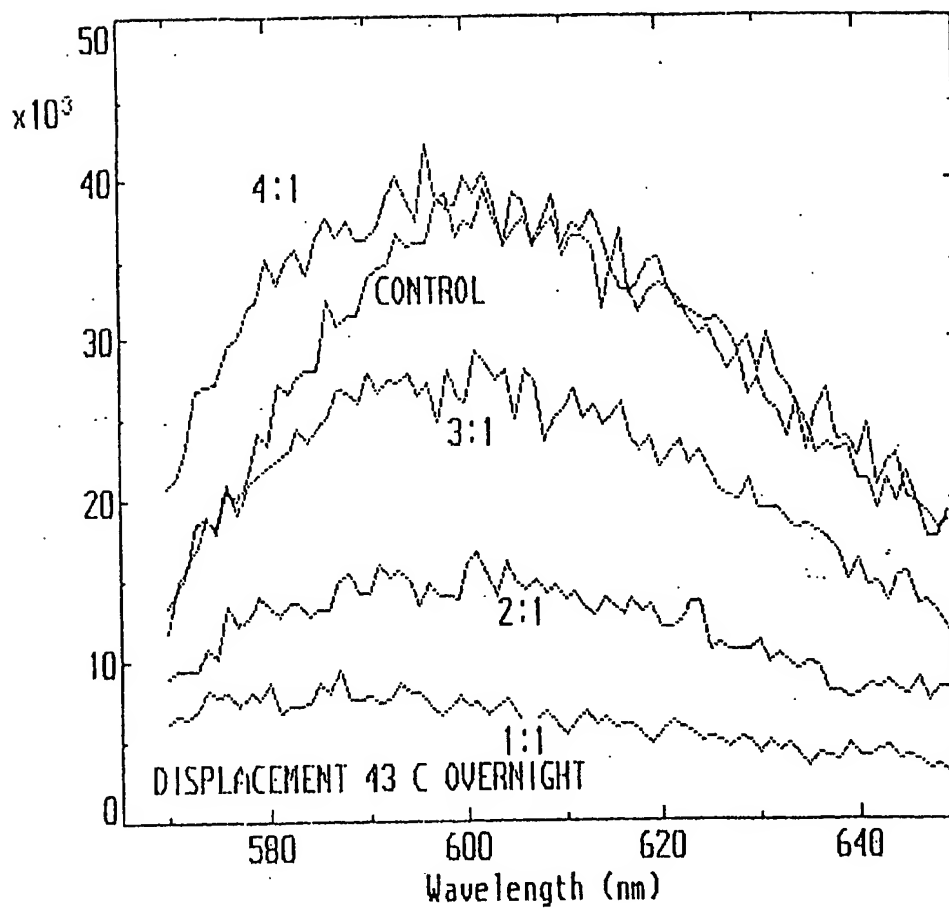


Figure 16

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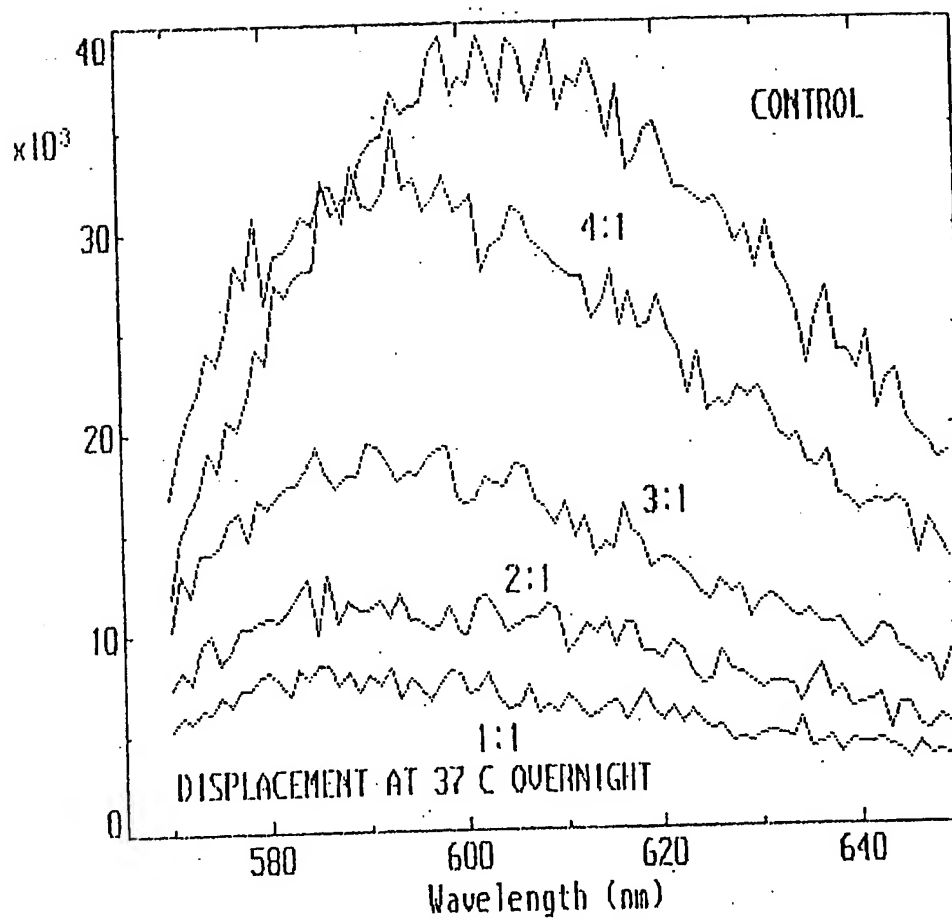


Figure 17

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pIBI 31-BH5-2

fmet AUG of Lac z (T7 Promotor region....
LAC PROMOTOR..ATG ACC ATG ATT ACG CCA GAT ATC AAA TTA ATA CGA CTC ACT ATA
oligo 50-mer 3'- lac t'aa t'gc ggt' ct'a t'ag t'Vt aat' tat' gct' gag t'ga t'al' c-5'
10 base insert
T7 RNA Start (T3 Promotor Region)
IGGG CTC ICCT TTA GTG ACG GTT AAT
....»} «- T3 Start Signal

pIBI 31 BSII/HCV

fmet AUG of Lac z (T3 Promotor region --) T3 RNA Start
LAC PROMOTOR ..ATG ACC ATG ATT ACG CCA AGC TCG AAA TTA ACC CTC ACT AAA /GGG
oligo 50-mer 3'- lac t'aa t'ac t'aa t'gc ggt' t'V--10 base insert--.....
(M- T7 Promotor Region)
MULTIPLE CLONING SITE + 390 BASE INSERT CTA /TAG TGA GTC CGT ATT AAT....
«- T7 Start Signal
5'-ct'a t'ag t'ga gt'c gt'a tt'a at'.....

Figure 18

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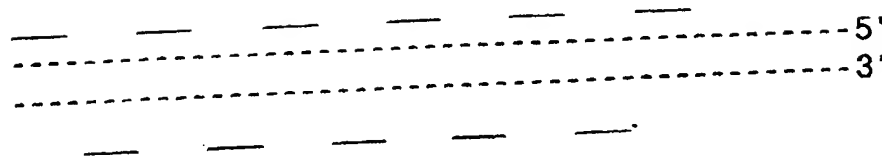
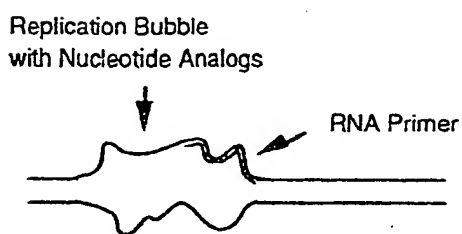


Figure 19

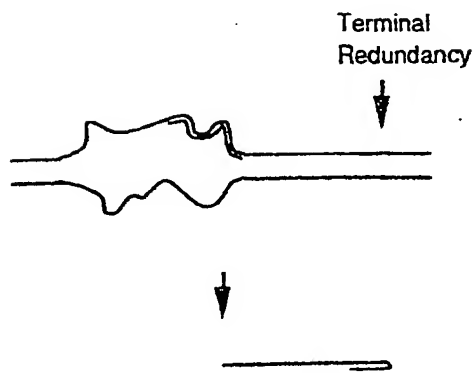
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**Primer-Dependent DNA Production
Using Nucleic Acid Construct**

Figure 20

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Hairpin Product

Figure 21

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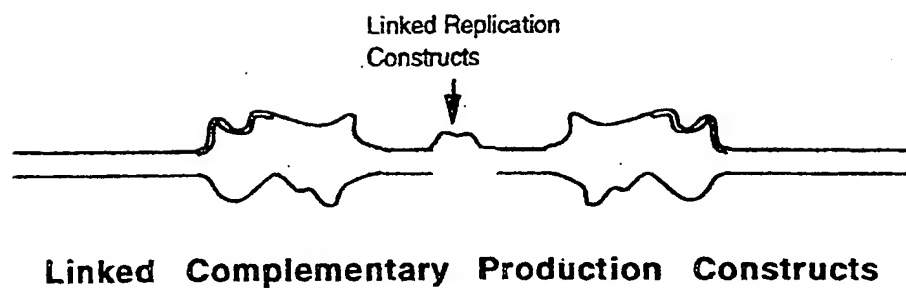
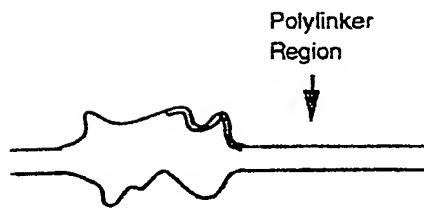


Figure 22

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Cloning Site in Production Constructs

Figure 23

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ARRANGEMENT OF OLIGONUCLEOTIDE PRIMERS IN AMPLIFICATION REACTION

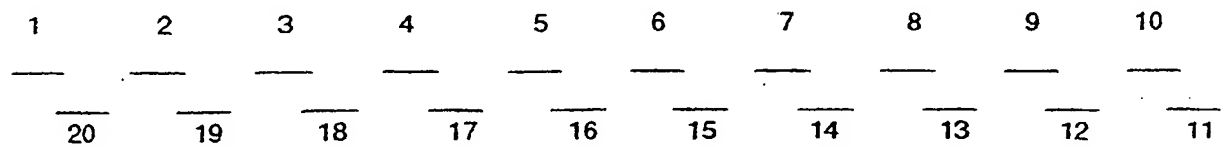


Figure 24